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ARE CHILEANS EXPOSED TO DIETARY FURAN?

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The occurrence of furan a possible carcinogen for humans (2B) in several thermally treated foods has caused concern into health world organizations, which have emphasized the need to increase the database information on the dietary human exposure to this compound.
In this sense, although Chilean consumer preferences include foods which may content considerable amounts of furan, currently there is no information regarding to dietary exposure to furan in Chile. Thus, the objective of this work was to determine the Chilean exposure to dietary furan.
For accomplishing this purpose, the furan concentration of 13 types of highly consumed commercial foods processed at high temperature (dairy products, baby foods, fruit juices, potato crisps, breakfast cereals, "marraqueta" and "hallulla" Chilean type breads, "sopaipillas" Chilean fried dough, cookies, biscuits, canned foods, fried and cooked fish, roast meat and coffee) were analyzed based on an optimized GC-MS method. In addition, risk assessment studies, mainly on the exposure estimate, were calculated based on diet data of Chilean individuals obtained from national studies.
Of the food items surveyed not only coffee (530 ng g^{-1}) but also low moisture starchy products like potato crisps, "Soda" type biscuits and toasted bread presented the highest furan concentration (200 ng g^{-1}, 110 ng g^{-1} and 190 ng g^{-1} respectively). Furthermore, samples of breakfast cereals contained furan levels up to 30 ng g^{-1}. Furan was also found in baby foods and fruit juices. An estimate of the furan intake for adults revealed that 30% comes from the consumption of coffee. Children have the highest intake of furan through potato crisps and breakfast cereals. It is worth noting that the estimate of the total median furan exposure for adults (15-75 years old) reached 26µg/day and 4 µg/day for children (10-12 years old). Since a genotoxic mode of action could be associated to furan-induced tumor formation; current Chilean dietary exposure level to this contaminant may indicate a risk to human health and a need for its mitigation.